

## CLAIMS:

1. A variable focus lens comprising:
- a fluid chamber (10) containing a first fluid (A) and a second fluid (B), the fluids being non-miscible and in contact over a meniscus (12),
  - means (14,16) for applying an electric field over the fluid chamber such that
- 5 the shape of the meniscus varies in dependence on the electric field,
- the first fluid having an index of refraction  $n_1$  and an Abbe number  $V_1$ , and the second fluid having an index of refraction  $n_2$  and an Abbe number  $V_2$ ,  $n_1$  being different from  $n_2$ ,
- wherein the parameters  $n_1$ ,  $n_2$ ,  $V_1$  and  $V_2$  comply with the following relation:

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$$0.75 < \frac{V_1(n_2 - 1)}{V_2(n_1 - 1)} < 1.25 \quad (I)$$

2. The variable focus lens according to claim 1, wherein the parameters  $n_1$ ,  $n_2$ ,  $V_1$  and  $V_2$  comply with the following relation:

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$$0.9 < \frac{V_1(n_2 - 1)}{V_2(n_1 - 1)} < 1.1 \quad (II)$$

3. The variable focus lens according to claim 1, wherein
- the fluid chamber comprises a substantially cylindrical wall,
- 20 - a fluid contact layer (18) is arranged on the inside of the cylindrical wall,
- the means for applying an electrical field comprising a first electrode (14) separated from the first fluid and the second fluid by the fluid contact layer (18), and a second electrode (16) acting on the first fluid, and
  - the fluid contact layer having a wettability by the first fluid which varies under
- 25 the application of a voltage between the first electrode and the second electrode, such that the shape of the meniscus varies in dependence on the voltage.

4. The variable focus lens according to claim 1, wherein the first fluid has an index of refraction of  $n_1 = 1.37$  and an Abbe number of  $V_1 = 49$ , and the second fluid has an index of refraction of  $n_2 = 1.4$  and an Abbe number of  $V_2 = 53$ .
- 5 5. The variable focus lens according to claim 1, wherein the first fluid comprises salted water, and the second fluid comprises polydimethylsiloxane.
6. An optical device comprising a lens according to any preceding claims.
- 10 7. An image capture device comprising a lens according to any of claims 1 to 5.